ABSTRACT

One aspect of the invention relates to a method of forming P-N junctions within a semiconductor substrate. The method involves providing a temporary impurity species, such as fluorine, within the semiconductor crystal matrix prior to solid source in-diffusion of the primary dopant, such as boron. The impurity atom is a faster diffusing species relative to silicon atoms. During in-diffusion, the temporary impurity species acts to reduce the depth to which the primary dopant diffuses and thereby facilitates the formation of very shallow junctions.